



NOAA Fisheries Coral Reef Conservation Program 2003 Pacific Highlight



Marine Debris Survey and Removal From the Northwestern Hawaiian Islands



Debris divers cutting derelict fishing gear off coral.
Picture by Megan Moews.

Marine debris, mostly derelict fishing gear from distant fisheries, is one of the greatest anthropogenic impacts to the reefs of the Northwestern Hawaiian Islands (NWHI). Fiscal year 2003 was the third year NOAA Fisheries (National Marine Fisheries Service –NMFS) has led a large-scale interagency partnership to study and remove derelict fishing gear from the NWHI. NOAA Fisheries Coral Reef Ecosystem Division at the Pacific Islands Fisheries Science Center collaborates with National Ocean Service, NWHI Coral Reef Ecosystem Reserve, State of Hawaii, City and County of Honolulu, U.S. Fish and Wildlife Service, U.S. Coast Guard, U.S. Navy, University of Hawaii, Sea Grant, Hawaii Metals and Recycling, Honolulu Waste Disposal, and other local agencies,

businesses and NGO partners.

This four-month effort employed sixteen divers aboard two chartered vessels that removed over 122 tons of marine debris from the reefs and beaches of Pearl and Hermes Atoll, Midway Atoll, Kure, Lisianski, Laysan, and French Frigate Shoals. This brings the multi-year total to over 351 tons (724,079 lbs). For the first time during this large-scale effort, marine debris divers surveyed Midway Atoll for derelict fishing gear. Divers surveyed approximately 95% of the back reef, the emergent reef, and some deeper areas at Midway and removed 41,000lbs of debris, leaving the coral reefs of Midway Atoll essentially cleared of derelict fishing gear.



Divers using airbags to help lift the debris to the ocean surface. Photo by: Kyle Koyanagi



Divers lifting the derelict fishing into the zodiac boat. Photo by Christy Kristner

While on Midway, the marine debris team also supported the filming efforts of two professional film companies, which will help highlight the problems associated with derelict fishing gear in the NWHI. The Japanese Television Workshop Company shot footage of debris removal operations and life aboard the two contract vessels to produce a half hour program on ecological issues; the program on aired Japanese T.V. during Sept. 2003. The Ocean Futures Society, an organization led by Jean-Michel Cousteau, filmed debris removal operations

for an upcoming documentary about the Northwestern Hawaiian Islands.

The derelict fishing gear not only impacts the reef structure by breaking off delicate coral structures and destroying the benthic habitat, but also entangles the animals that

utilize the reef habitat such as monk seals and sea turtles. Every year, survey teams monitor debris accumulation in specific sites labeled High Entanglement Risk Zones (HERZ). Researchers identified these zones during the beginning of the debris study as areas of increased activity by Hawaiian monk seals (*Monachus schauinslandi*).



Monk Seal entangled in derelict fishing gear on beach of Pearl and Hermes. Photo by Chad Yoshinaga

During the field season at Pearl and Hermes, three green sea turtles were found entangled in derelict fishing gear. The debris divers carefully cut the nets away from the turtles, all of which appeared to have no major injuries or impediments to movement. On several occasions, debris divers noted monk seals and green sea turtles basking on and/or investigating nets. Protected Species Division (PSD) personnel



Hawksbill Turtle entangled in derelict fishing gear on beach of Pearl and Hermes. Photo by Chad Yoshinaga

reported two incidents of monk seal entanglements at Pearl and Hermes Atoll, and four entanglements at Midway during the summer months. All of the entangled seals were released uninjured aside from one adult female at Midway. Additionally, PSD personnel at Pearl and Hermes successfully disentangled a Hawksbill turtle.

While the primary job of the marine debris crew is to document, study and remove the derelict fishing gear impacting the reef systems and document net types for potential identification of source fisheries, the crew also conducts a number of small short-term studies to increase our understanding of NHWI and longer-term impacts of the derelict fishing gear. The team conducts both an ecological succession study of algal communities associated with net removal scars and a growth rate studies of different corals in association with marine debris to understand the physical changes caused by the derelict fishing gear. Another study assesses water and debris movement using shallow draft drifter buoys to determine internal reef currents to understand the accumulation patterns. Other on-going studies include: baseline population study of the black-lipped pearl oyster (*Pinctada margaritifera*) and the crown-of-thorns sea star (*Acanthaster planci*), and a coral recruitment study using settlement plates.



Divers removing derelict gear from coral. Photo by Kyle Hogrefe

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